Month XX, 2019

"Proposed" Permit: APC-82/0981-OPERATION (Amendment 13)(NSPS)(FE)
Fluid Catalytic Cracking Unit (FCCU), FCCU Carbon Monoxide Boiler, FCCU COB Selective Non-Catalytic Reduction (SNCR) System and Wet Gas Scrubber System
Delaware City Refining Company
Delaware City Refinery
4550 Wrangle Hill Road
Delaware City, DE 19706

ATTENTION: Jeffery Coleman
Refinery Manager

Dear Mr. Coleman:

Pursuant to 7 **DE Admin. Code** 1102 Section 2, approval of the Department of Natural Resources and Environmental Control (Department) is hereby granted for the operation of the Fluid Catalytic Cracking Unit (FCCU), its Carbon Monoxide Boiler (COB), its Hamon-Research-Cottrell Selective Non-Catalytic Reduction (SNCR) System in the FCCU COB and the Wet Gas Scrubber (WGS) train consisting of a Belco Pre-Scrubber, an amine based Cansolv Regenerative Wet Gas Scrubber with caustic polisher, hereafter all components are collectively referred to as "the FCCU WGS System" at the Delaware City Refinery, 4550 Wrangle Hill Road in Delaware City, Delaware in accordance with the following:

- Application submitted on Form Nos. AQM-1, AQM-2, AQM-3.1, AQM-4.9 and AQM-5 dated December 16, 2014 signed by Jose Dominguez.
- Electronic mail with attachment from Larry Boyd to Ravi Rangan dated April 21, 2015 detailing FCCU SNCR NH_3 emissions.
- Electronic mail from Larry Boyd to Ravi Rangan dated April 22, 2015 with comments on the FCCU SNCR Draft Permit.
- Letter from Larry Boyd to Ravi Rangan dated March 13, 2017 detailing compliance methodology for HCN emissions during full burn operation.
- Settlement Agreement dated July 11, 2019.

This permit is issued subject to the following conditions:

1. **General Provisions**

1.1. This permit expires five years from the date of issuance.

1.2. Representatives of the Department may, at any reasonable time, inspect this facility.

1.3. This permit may not be transferred to another person, owner, or operator unless the transfer has been approved in advance by the Department. A request for a permit

transfer shall be received by the Department at least 30 days before the date of the requested permit transfer. This request shall include:

1.3.1 Signed letters from each person stating the permit transfer is agreeable to each person; and

1.3.2 An Applicant Background Information Questionnaire pursuant to 7 Del. C., Chapter 79 if the person receiving the permit has not been issued any permits by the Department in the previous 5 years.

Approval (or disapproval) of the permit transfer will be provided by the Department in writing.

1.4. The owner or operator shall not initiate construction, install, or alter any equipment or facility or air contaminant control device which will emit or prevent the emission of an air contaminant prior to submitting an application to the Department pursuant to 7 DE Admin. Code 1102, and, when applicable 1125, and receiving approval of such application from the Department; except as authorized by this permit or exempted in the Regulations.

1.5. The owner or operator shall submit a complete supplement to the Title V permit application pursuant to 7 DE Admin. Code 1130, Section 5(b) within 12 months of the date of issuance of this permit. The application shall address all applicable requirements including those of 40 CFR Part 64 (Compliance Assurance Monitoring) if applicable.

2. Emission Limitations

2.1. Air contaminant emission levels from the FCCU WGS System through the WGS stack[1] shall not exceed those specified in the Regulations at 7 **DE Admin. Code** 1100, *et. seq*. and the following[2]:

2.1.1. Volatile Organic Compound (VOC) Emissions

2.1.1.1. VOC emissions shall not exceed 0.40 lb/mmdscf and 41.4 TPY.

2.1.1.2. The leak detection and repair requirements to control fugitive VOC emissions from the FCCU shall be in accordance with the requirements in 40 CFR 60, Subpart GGG for existing components in light liquid and gaseous service and in accordance with 40 CFR part 63 subpart CC for new components in light liquid and gaseous service. The leak detection and repair requirements to control fugitive emissions from the FCCU shall be in accordance with the Consent Decree for both new and existing components in light liquid and gaseous service.

2.1.2. Nitrogen Oxide (NOx) Emissions

2.1.2.1 NO_X emissions shall not exceed those prescribed in Condition 3, Table 1e.4.i of **Permit: AQM-0003/00016-Part 2 (Renewal 1)(Revision2)** dated April 12, 2018.

[1] This permit specifically does not authorize any emissions through the Goggle valve and its bypass stack.
[2] Tons per year (TPY) is defined as "tons per rolling twelve months" unless otherwise specified.

2.1.2.2 NO_X emissions shall not exceed the following at all times:
2.1.2.2.1 137.0 ppmvd @ 0% oxygen on a 7-day rolling average basis.
2.1.2.2.2 100.7 ppmvd @ 0% oxygen on a 365-day rolling average basis.

2.1.2.3 NO_X emissions shall not exceed those achieved by proper operation of the SNCR as follows:
2.1.2.3.1 108.2 ppmvd @ 0 % oxygen on a 7-day rolling average basis.
2.1.2.3.2 79.6 ppmvd @ 0 % oxygen on a 365-day rolling average basis.

2.1.3. Particulate Matter (TSP/PM_{10})

Particulate matter emissions shall not exceed 1 lb/1000 lb of coke burned and 203 TPY.

2.1.4 Sulfuric Acid (H_2SO_4) Emissions

H_2SO_4 emissions shall meet one of the following standards:

2.1.4.1 H_2SO_4/SO_3 emissions shall be reduced by at least 40% across the wet gas scrubber system; or

2.1.4.2 The outlet concentration of H_2SO_4/SO_3 from the stack shall be no greater than 10 ppmvd.

2.1.5 Sulfur Dioxide (SO_2) Emissions

SO_2 emissions shall not exceed 25 ppmvd @ 0% O_2 on a rolling 365 day average, 50 ppmvd @ 0% O_2 on a rolling 7 day average, and 352 TPY.

2.1.6 Carbon Monoxide (CO) Emissions

2.1.6.1 CO emissions shall not exceed 500 ppmvd as a 1 hour average and 3,085 TPY.

2.1.6.2 The Company shall not cause or allow the emission of carbon monoxide from the FCCU unless it is burned at no less than 1300°F for at least 0.3 seconds in the FCCU COB, or combusted in the FCCU regenerator when operating in full-burn mode.

2.1.7 Lead (Pb) Emissions

Pb emissions shall not exceed 4.37 E-04 pounds per thousand pounds of coke burned.

2.1.8 Hazardous Air Pollutant (HAP) Emissions

2.1.8.1 The Company shall comply with all the applicable requirements of 40 CFR Part 63, subpart UUU.

2.1.8.2 Hydrogen Cyanide (HCN): HCN emissions from the FCCU WGS shall not exceed 45 lb/hr.

2.1.9 Ammonia (NH_3) Emissions:

NH_3 emissions shall not exceed 8.5 lb/hour and 37 TPY

2.2. The opacity from the FCCU WGS stack shall not be greater than 20% opacity for an aggregate of more than 3 minutes in any 1 hour or more than 15 minutes in any 24 hour period.

2.3. Odors from this source shall not be detectable beyond the plant property line in sufficient quantities such as to cause a condition of air pollution.

2.4. In the event that the FCCU COB is bypassed and/or shut down, operation of the FCCU shall be in accordance with Attachment "A" of this permit.

In the event of a planned shutdown of the CO Boiler or in the event of planned operation of the CO Boiler at firebox temperatures less than 1300 deg F, the Owner/Operator shall initiate promoted burn in the FCCU and control CO emissions in accordance with Condition 3, Table 1.e.5.i of **Permit: AQM-003/00016** prior to bypassing/shutting down the CO Boiler and/or reducing firebox temperature below 1300 deg F in the CO Boiler.

2.5. The emission limitations in Condition 2.1 with the exception of Conditions 2.1.3, 2.1.4 and 2.1.5, shall not apply during periods when the FCCU COB is combusting refinery fuel gas only and during periods of planned shut downs and planned start ups of the FCCU for a period of time not to exceed 80 hours for each planned shut down and each planned start up event. The planned shut down period shall begin 8 hours prior to the time when there is no feed entering the FCCU reaction section. The planned start up period shall begin when dry-out of the FCCU is commenced. The emission limitations in Condition 2.1 shall apply to each planned start up event after the expiration of the 80 hour period following commencement of FCCU dry-out. In lieu of the emission limitations in Condition 2.1, the following emission limitations shall apply during periods when the FCCU COB is combusting refinery fuel gas only and during planned start ups and shut downs of the FCCU:

2.5.1. VOC 9.5 lbs/hr
2.5.2. PM 500 lbs/hr
2.5.3. SO_2 165 lbs/hr
2.5.4. CO 860 lbs/hr

Compliance with these emission limitations shall be determined based on engineering calculations.

3. **Operational Limitations**

3.1. The Company shall comply with the following operational limits:

3.1.1. With the exception of regenerator process offgas, the Company shall not burn any fuel in the FCCU COB that contains hydrogen sulfide (H_2S) in excess of 0.10 gr/dscf (162 ppm);

3.1.2. Except as provided in Condition 3.2, the COB, the Belco pre-scrubber, the amine-based Cansolv regenerative WGS, and the caustic polishing scrubber shall be operating properly at all times when the FCCU is operating.

3.1.3. During planned start ups of the FCCU, the FCCU COB and WGS shall be operating prior to introducing feed into the riser reactor of the FCCU. In the event of a

planned shut down of the FCCU, the FCCU COB or the WGS, the Company shall continue to operate the FCCU COB and WGS until there is no feed entering the riser reactor of the FCCU prior to commencing shut down of the FCCU COB and the WGS.

These planned start up and shut down provisions will not apply to the COB if the FCCU regenerator is operating in full burn mode.

3.1.4. SNCR Operation

3.1.4.1 Except as provided by Condition 3.1.4.3, the FCCU COB shall not be operated while in partial burn mode unless the SNCR system is in use and operating properly whenever the SNCR system is available. Compliance with the emission limitations in 2.1.2 shall constitute proper operation.

3.1.4.2 The owner or operator shall operate the SNCR system in accordance with manufacturer's recommendations and shall be operated at all times that it is available.

3.1.4.3 The SNCR system is considered available except during periods of planned maintenance or malfunction as defined in Condition 3.1.4.4

3.1.4.4 "Malfunction" means any sudden and unavoidable failure of air pollution control equipment or process equipment or of a process to operate in a normal or usual manner, and that causes the source to exceed a technology based emission limitation under the permit, due to unavoidable increases in emissions attributable to the malfunction. An emergency or malfunction shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.

3.2 Except as provided in Condition 2.4, this Permit does not authorize emissions exceeding the limits set forth in Condition 2 including emissions during periods of any unplanned shutdown of the FCCU, or any unplanned shutdown or bypass of the FCCU COB and SNCR, or the Belco prescrubber or WGS system. Instead, in the event of any unplanned shutdown of the FCCU or any unplanned shutdown or bypass of the FCCU COB and SNCR or Belco prescrubber or the WGS system, the Company shall bear the burden of demonstrating to the Department's satisfaction that the Company's continued operation of the FCCU should not subject the Company to an enforcement action for noncompliance with emission limitations or operating standards included in this Permit or otherwise applicable to the facility under 7 **DE Admin. Code** 1100. Such demonstration must at a minimum be supported by sufficient documentation and emissions data including all relevant emissions calculations, formulas, and any assumptions made thereof. The Department's evaluation shall consider, the specific circumstances of the event, including without limitation 1) the cause of, and the Company's response to, the unplanned shutdown; 2) whether the Company has taken all reasonable and prudent steps to abide by the emissions limit conditions; 3) whether the Company has taken all reasonable and prudent steps to minimize the emissions associated with the plant; 4) the degree to which the Company has reduced throughput to the FCCU, and the basis for such degree of

reduction; 5) the estimated emissions associated with a complete shutdown of the FCCU; 6) whether the Company had reviewed all prior similar causes of unplanned shutdowns and had taken all reasonable and prudent actions necessary to avoid future similar outages; and 7) the actual emissions during the period of the unplanned shutdown.

3.3 There shall be no emissions of uncondensed VOCs from the condensers, hot wells or accumulators of any vacuum producing system.

3.4 During process unit turnarounds the Company shall provide for the following:

3.4.1 Depressurization venting of the process unit or vessel to a vapor recovery system, flare, or firebox.

3.4.2 No emission of VOC from a process unit or vessel until its internal pressure is 136 kiloPascals (kPa) (19.7 pounds per square inch atmospheric [psia]) or less.

3.5

3.5.1 At all times, including periods of startup, shutdown, and malfunction, the Company shall, to the extent practicable, maintain and operate the facility including all associated air pollution control equipment in a manner consistent with good air pollution control practices for minimizing emissions.

3.5.2 All structural and mechanical components shall be maintained in proper operating condition.

4. **Compliance Methodology**

4.1. Compliance with Conditions 2.1.1.1 (VOCs), 2.1.3 (TSP/PM_{10}), 2.1.4 (H_2SO_4), 2.1.7 (Pb), 2.1.8.1 (HAPs) and 2.1.9 (NH_3) shall be based on stack testing to be conducted in accordance with Condition 5 of this permit. The Company shall ensure adequate test ports are provided to carry out such testing in accordance with Regulation No. 17 section 2.3 in the exhaust stack, and upstream of the Belco pre-scrubber in accordance with EPA RM 1 of 40 CFR Part 60, Appendix "A" to ensure representative isokinetic sampling.

4.2. Compliance with Condition 2.1.1.2 for new components in light liquid and gaseous service shall be based on compliance with the standards in 40 CFR 63.162 through 63.177.

4.3. Compliance with Conditions 2.1.2, 2.1.5, 2.1.6.1, and 3.1.1 shall be based on continuous monitoring systems.

4.4. Compliance with Condition 2.1.6.2 is defined as maintaining a firebox temperature of no less than 1300° F as measured on a minute average basis.

4.5. Compliance with Condition 2.1.8.2 shall be based on compliance with Condition 2.1.6.1.

4.5.1 Alternatively, during startup, shutdown, malfunction and hot standby events, compliance may be demonstrated based on the work practice standard to maintain the Oxygen (O_2) concentration in the exhaust gas from the regenerator overhead at or above 1 volume percent (dry basis).

4.6. Compliance with Conditions 3.1.2 and 3.1.3 shall be based on the monitoring/testing and recordkeeping requirements.

4.7. Compliance with Conditions 3.4 shall be based on either piping the uncondensed vapors to a firebox or incinerator. Alternately, the vapors may be compressed and added to the refinery fuel gas. During process unit turnarounds, the Company shall conduct depressurization venting of the process unit or vessel to a vapor recovery system, flare or firebox. The Company shall monitor the pressure in each process or vessel until its internal pressure is 136kPa or less. These actions shall be documented.

4.8. Compliance with the standards in 40 CFR subpart GGG shall be based on the test methods and procedures in 40 CFR 60.592 and compliance with the requirements of 40 CFR Part 63 subpart CC shall be based on the standards in 40 CFR 63.648.

4.9. Compliance with Condition 3.5 shall be based on information available to the Department concerning the Company's actions with respect to such events, and shall include the Department's review of all available facts and circumstances including, but not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.

5. **Testing and Monitoring Requirements**

5.1 Within 60 days after achieving the maximum production rate at which the facility will be operated, but not later than 180 days after initial startup of such facility, the owner or operator shall conduct performance test(s) and furnish the Department with a written report of the results of such performance test(s) in accordance with the following general provisions:

5.1.1 One original and 2 copies of the test protocol including a "Source Sampling Guidelines and Preliminary Survey Form" shall be submitted a minimum of 30 days in advance of the tentative test date to the address in Condition 6.3. The tests shall be conducted in accordance with the State of Delaware and Federal requirements.

5.1.2 The test protocol shall be approved by the Department prior to initiating any testing. Upon approval of the test protocol, the Company shall schedule the compliance demonstration with the Air Surveillance and Engineering & Compliance Branches. The Department must observe the test for the results to be considered for acceptance, unless the Department determines in advance, in writing, that the test need not be observed. Further, the Department may in its discretion determine based on its observation of the test that it need not observe the entire test.

5.1.3 The final results of the testing shall be submitted to the Department within 90 days of the test completion. One original and 2 copies of the test report shall be submitted to the addresses below:

Original and One Copy to:	One Copy to:
Engineering & Compliance Branch	Air Surveillance Branch
Attn: Assigned Engineer	Attn: Stack Test Engineer
100 W. Water Street, Suite 6A,	715 Grantham Lane
Dover, DE 19904	New Castle, DE 19720

5.1.4 To be considered valid, the final results report shall include the emissions test report (including raw data from the test) as well as a summary of the results and a

statement of compliance or non-compliance with permit conditions signed by a member of the Company's Health, Safety and Environment department.

5.1.5 The results must demonstrate to the Department's satisfaction that the emission unit is operating in compliance with the applicable regulations and conditions of this permit; if the final report of the test results shows non-compliance the owner or operator shall propose corrective action(s). Failure to demonstrate compliance through the test may result in enforcement action.

5.2 The QA/QC procedures for the SO_2 CEMS shall be established in accordance with the procedures in Appendix "F" of 40 CFR Part 60. For the purpose of determining the Relative Accuracy of the CEMS, the applicable standard shall be 25 ppmvd.

5.3 The NO_x CEMS shall be installed and certified by satisfying the requirements of the applicable Performance Specifications in Appendix "A" of 40 CFR Part 60. The QA/QC procedures for the CEMS shall be established in accordance with the procedures in Appendix "B" of 40 CFR Part 60.

5.4 Compliance with PM_{10} emission limits shall be based on performance testing conducted in accordance with Condition 5.1 and annually thereafter, as follows:

5.4.1 H_2SO_4: Compliance with emission limits set in accordance with Conditions 2.1.3.1 and 2.1.4 shall be based on testing in accordance with Reference Method 8 in Appendix "A" of 40 CFR Part 60, or other testing methodology approved by the Department.

5.4.2 TSP: Compliance with Condition 2.1.3 shall be based on testing in accordance with Reference Method 5B in Appendix "A" of 40 CFR Part 60, or other testing methodology approved by the Department.

5.4.3 PM_{10}: Compliance with emission limits set in accordance with Condition 2.1.3 shall be based on testing in accordance with Methods 5B/202, or other testing methodology approved by the Department.

The Company may petition the Department to decrease the frequency of PM_{10} performance tests based on the results of any performance testing.

5.5 CO: Compliance testing shall be based on CEMS. The CEMS shall be installed and certified by satisfying the requirements of Performance Specifications No. 4 in Appendix "B" of 40 CFR Part 60. The QA/QC procedures for the CEMS shall be established in accordance with the procedures in Appendix "F" of 40 CFR Part 60.

5.6 VOC as CH_4: Compliance testing shall be based on Reference Method 25 A in Appendix "A" of 40 CFR Part 60 every three years thereafter. The Company may petition the Department to decrease the frequency of VOC performance tests based on the results of any performance testing

5.7 Pb: Compliance shall be based on the stack test based emission factor in terms of lb/1,000 lb coke burn rate. The Company shall conduct additional performance testing in accordance with this condition every three years, unless the Department approves less frequent testing.

5.8 The Company shall continuously monitor the temperature of the FCCU COB firebox.

5.9 The Company shall continuously monitor the pressure drop across the Agglo-filtering modules and Cyclolab Droplet Separators and the quench/pre-scrubber recirculation pump discharge pressure. The determination that the opacity from the FCCU WGS stack, when it is operating, satisfies the requirements of Condition 2.2 shall be based upon the following parametric monitoring:

5.9.1 The minimum delta-P across the Agglo-Filtering modules and Cycolab Droplet Separators shall be 6 inches of water column, evaluated on a one minute average basis; and

5.9.2 A minimum discharge pressure, evaluated on a one minute average basis, from the quench/pre-scrubber recirculation pumps satisfying the less stringent of:

5.9.2.1 115 psig, or

5.9.2.2 The discharge pressure equivalent to 95% of the average discharge pressure recorded during performance testing performed in accordance with the methods identified in Condition 5.4, provided that such performance testing also includes a demonstration of compliance with the visual emissions standard identified in Condition 2.2 using EPA Method 9.

5.9.3 Notwithstanding Condition 5.9.1 and Condition 5.9.2, if either the differential pressure across the Agglo-Filtering Modules/Cyclolab Droplet Separators or the discharge pressure from the quench/prescrubber falls below the minimum levels established under Conditions 5.9.1 and 5.9.2 for greater than 3 minutes in any hour or more than 15 minutes in any 24 hour period, the Company may perform a visual emission test in accordance with EPA Reference Method 9 to establish that the visible emissions do not exceed the opacity standard specified in Condition 2.2 at the reduced parameter level. In such a case, the new minimum value for the parameter in question shall be the average value recorded during the Method 9 test, and shall be used in conjunction with Condition 5.9.1 to evaluate compliance with Condition 2.2.

5.9.4 During periods of full burn operation with the COB bypassed or the COB operating at a reduced level, if visible emissions are observed to be greater than 20% opacity, the Company shall perform a visual emission test in accordance with EPA Reference Method 9 to establish that the visible emissions do not exceed the opacity standard specified in Condition 2.2.

5.10 All monitor certifications shall be conducted within 60 days of the unit attaining maximum production but not later than 180 days after unit start up. A "Source Sampling Guidelines and Preliminary Survey Form" must be submitted and found acceptable to the Department at least 30 days prior to the performance testing. Results of the Performance Specification testing shall be submitted to the Department, in triplicate, within 90 days after completion of the testing.

6. **Record Keeping Requirements**

6.1. The Company shall maintain all records necessary for determining compliance with this permit in a readily accessible location for 5 years and shall make these records available to the Department upon written or verbal request. These records shall include:

6.1.1. CEMS data;
6.1.2. Calibration and audit results;
6.1.3. Stack test results;
6.1.4. The daily FCCU COB fuel usage;
6.1.5. FCCU COB firebox temperature;
6.1.6. Detailed daily records of observations of visible emissions or the absence of visible emissions, or daily visible emissions observations, or other records identified in an approved alternative plan;
6.1.7. Date of each FCCU process unit or vessel turnaround;
6.1.8. Date and duration of seamless bypass operation;
6.1.9. Internal pressure of the process unit or vessel immediately prior to venting to the atmosphere; and
6.1.10. VOC leak repair records required by 40 CFR 60.592 for existing components in light liquid and gaseous service and 40 CFR 63.654 for new components in light liquid and gaseous service.

6.2. The rolling 12 month total emissions for each pollutant shall be calculated and recorded for each month in an easily accessible format for each pollutant listed in Condition 2.1.

7. **Reporting Requirements**

7.1. Emissions in excess of any permit condition or emissions which create a condition of air pollution shall be reported to the Department immediately upon discovery by calling the Environmental Emergency Notification and Complaint number, (800) 662-8802.

7.2. In addition to complying with Condition 7.1 of this permit, the Company shall satisfy any reporting required by the **"Reporting of a Discharge of a Pollutant or an Air Contaminant"** Regulation, within 30 calendar days of becoming aware of an occurrence subject to reporting pursuant to Condition 7.1. Further the Department may in its discretion require the Company to submit reports not otherwise required by the Regulation. All reports submitted to the Department pursuant to this Condition shall be submitted in writing and shall include the following information:

7.2.1. The name and location of the facility;
7.2.2. The subject source(s) that caused the excess emissions;
7.2.3. The time and date of the first observation of the excess emissions;
7.2.4. The cause and expected duration of the excess emissions;
7.2.5. For sources subject to numerical emission limitations, the estimated rate of emissions (expressed in the units of the applicable emission limitation) and the operating data and calculations used in determining the magnitude of the excess emissions; and
7.2.6. The proposed corrective actions and schedule to correct the conditions causing the excess emissions.

7.2.7. Emissions on the same day from the same emission unit may be combined into one report. Emissions from the same cause that occur contemporaneously may also be combined into one report.

7.2.8. The Company shall submit an electronic copy of all required reports to the Department's compliance engineer assigned to the Refinery.

7.3. Semiannual reports for the preceding six month period shall be submitted to the Department by January 31 and July 31 of each calendar year. The semiannual reports required by this section shall be increased in frequency to quarterly reports at the Department's discretion and shall become effective upon request of the Department after reasonable notice to the Company. An electronic copy of all required reports shall be sent to the Department's compliance engineer assigned to the Refinery. The required reports shall contain the following information:

7.3.1. A summary of all excess emissions for the six month period;
7.3.2. Periods when the FCCU COB firebox temperature fell below 1300° F; and
7.3.3. The duration and magnitude of all periods of excess opacity;

7.4. Quarterly NO_x CEMS reports for the preceding quarter shall be submitted to the Department for the CEMS required by this permit by January 31, April 30, July 31 and October 31 of each calendar year and shall include the following:

7.4.1. Excess emissions and the nature and cause of the excess emissions, if known. The summary shall consist of emission averages, in the units of the applicable standard, for each averaging period during which the applicable standard was exceeded.

7.4.2. The date and time identifying each period during which the continuous monitoring system was inoperative, except for zero and span checks, and the nature of system repairs or adjustments.

7.4.3. When no excess emissions have occurred and the CEMS have not been inoperative, repaired, or adjusted, such information shall be included in the report.

7.5. Quarterly SO_2 and CO CEMS reports for the preceding quarter shall be submitted to the Department by January 30, April 30, July 30 and October 30 of each calendar year and shall include the information required by 40 CFR 60.7(c) and (d).

7.6. Annual compliance test reports shall be submitted to the Department within 90 days of completion of the test.

7.7. VOC leak repair records shall be submitted to the Department as required by 40 CFR 60.592 for existing components in light liquid and gaseous service and 40 CFR 60.654 for new components in light liquid and gaseous service.

7.8. One original of all required reports in hard copy format shall be sent to the address below:

Air Quality Management Section
Division of Air Quality
State Street Commons
100 W. Water Street, Suite 6A
Dover, DE 19904

One copy of all required reports in hard copy format shall be sent to the address below:

Compliance Engineer
Engineering & Compliance Branch
715 Grantham Lane
New Castle, DE 19720

8. **Administrative Conditions**

8.1. This permit shall be made available on the premises.

8.2. This permit authorizes the operation of the equipment authorized to be constructed by **Permit: APC-82/0981-CONSTRUCTION (Amendment 12)(NSPS)** dated April 23, 2015 and supersedes **Permit: APC-82/0981-OPERATION (Amendment 12)(NSPS)** dated March 23, 2017.

8.3. Failure to comply with the provisions of this permit may be grounds for suspension or revocation.

Sincerely,

Angela D. Marconi, P.E.
Acting Program Manager
Engineering & Compliance Branch

ADM:LTR
F:/EngandCompliance/LTR/ltr19016.doc

pc: Dover Tile V File
Mark J. Lutrzykowski, P.E.
Dawn Minor
Lindsay Rennie

ATTACHMENT "A"

CO Boiler Bypass Events – Conversion to Full Burn

The procedures described herein shall apply during periods of transition when the CO Boiler experiences an unplanned start-up or shut-down event.

Rationale:

DCRC is installing a bypass line around the CO boiler to allow for regenerator flue gas to be treated in the wet gas scrubber (WGS) during periods when the CO boiler is not available or otherwise out of service. When the regenerator flue gas is bypassing the CO boiler, the FCCU will be converted to operate in full burn to minimize CO emissions. However, if the CO boiler were to shutdown unexpectedly, it is not possible to instantaneously convert the regenerator from partial burn operation to full burn operation and, thus, the following provisions address the operation of the FCCU during such transition periods.

Interim Control Measures

The Owner/Operator shall comply with the following interim control measures:

1. Unplanned Start-up and Shutdown of Fluid Catalytic Cracker Unit CO Boiler. In the event that the FCCU COB is to be shut down for a period longer than 24 hours, DCRC shall promptly begin necessary process changes to provide for the complete combustion of carbon monoxide. Full CO combustion operation shall be achieved within 24 hours.

2. If there is an emergency shutdown of the FCCU CO Boiler due to upsets or malfunctions, the refinery will take the following steps:

   - Open the bypass line to allow for treatment of regenerator flue gases in the wet gas scrubber;
   - Immediately begin the necessary process changes to allow for the complete combustion of carbon monoxide in the regenerator; and
   - FCCU throughput and operating conditions will be safely adjusted as necessary (see FCCU Turndown Factor below) to allow full CO combustion operation to be achieved within 24 hours of attainment of appropriate operating conditions.

   If there is an unplanned or emergency shutdown of the FCCU CO Boiler, the refinery will conduct an evaluation of the cause of the shutdown. If the CO Boiler can be repaired and brought back on line in less than 24 hours, then the regenerator flue gas may continue to bypass the COB to allow it to be repaired or restarted, and combustion promoter need not be added. Until the FCCU CO boiler is returned to normal operation or until full promoted burn conditions are established in the regenerator, in order to minimize FCCU CO emissions, the FCCU feed rate will be reduced to the minimum operating rate as described in the FCCU Turndown Factor below. During this period (24 hours maximum), the requirements in Condition 2.1.6 and 7 **DE Admin. Code** 1111 shall not apply.

FCCU Turn Down Factor

These procedures have been incorporated to minimize FCCU CO emissions during time periods that the FCCU COB is bypassed.

1. If the Company's initial assessment indicates that the FCCU COB can be returned to service within 24 hours after the unplanned shutdown or emergency shutdown, or full combustion of CO has been achieved to meet applicable emission limits, then no rate cuts will be initiated and combustion promoter need not be added. The FCCU may continue to operate until the COB is restarted.

2. If the Company's initial assessment indicates that the FCCU COB cannot be returned to service within 24 hours after the unplanned or emergency shutdown, the Company shall take the following actions:

    a. The Company will promptly begin to reduce the FCCU feed rate at a rate of 5,000 bph until the unit is operating at 55,000 bpd; and

    b. Combustion promoter will be added to the FCCU regenerator when appropriate operating conditions have been achieved. Fully promoted (complete) combustion will be achieved within 24 hours of the start of the unplanned or emergency shutdown.